ABSTRACT OF THE DISCLOSURE

A catheter system is provided for accessing the coronary ostia transluminally from a peripheral arterial access site, such as the femoral artery, and for inducing cardioplegic arrest by direct infusion of cardioplegic solution into the coronary arteries. In a first embodiment, the catheter system is in the form of a single perfusion catheter with multiple distal branches for engaging the coronary ostia. In a second embodiment, multiple perfusion catheters are delivered to the coronary ostia through a single arterial cannula. In a third embodiment, multiple perfusion catheters are delivered to the coronary ostia through a single guiding catheter. In a fourth embodiment, multiple catheters are delivered to the coronary ostia through a single guiding catheter which has distal exit ports that are arranged to direct the perfusion catheters into the coronary ostia. In each embodiment, the catheters are equipped with an occlusion means at the distal end of the catheter for closing the coronary ostia and isolating the coronary arteries from the systemic blood flow. The occlusion means can take the form of an inflatable occlusion balloon cuff, a tapered occlusion device or an O-ring encircling the distal end of the catheter. An optional ventricular venting catheter can be included in the system for venting blood and fluids from the left ventricle of the heart. The catheter system is combined with a femoral-to-femoral cardiopulmonary bypass system to provide a system for cardioplegic arrest and total cardiopulmonary support during minimally invasive cardiac surgical procedures.